



## **WATER RESOURCES RESEARCH GRANT PROPOSAL**

**Project ID:** MT281

**Title:** MTBE Biobarriers in Stream Sediments

**Focus Categories:** Treatment, Groundwater

**Keywords:** biobarriers, groundwater, gasoline

**Start Date:** 03/01/2001

**End Date:** 02/28/2002

**Federal Funds:** \$17,766

**Non-Federal Matching Funds:** \$36,103

**Congressional District:** at-large

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**Abstract**

MTBE is an oxygenate added to gasoline to help reduce carbon monoxide emissions and improve burning efficiency. MTBE is currently the most highly used fuel oxygenate. MTBE has been associated with leaking underground storage tank (LUST) sites in Montana and elsewhere. The unique properties of MTBE make it a particular problem - it is not easily removed via typical treatment mechanisms such as skimming and air sparging. The high solubility of MTBE causes it to travel with groundwater plumes, often intercepting surface waters. This is of concern because of the varied uses of surface waters. This project will examine a LUST site near Ronan, MT, where a fuel release in 1993 has caused MTBE to emerge in spring creek sediments over 1500 meters down-gradient from the release. It is believed that biodegradation in this sediment zone could be enhanced through oxygenation or bioaugmentation such that a biobarrier to MTBE is formed. Laboratory experiments in microcosm format will investigate the efficacy of three known MTBE degrading organisms on the mineralization of MTBE in Ronan stream sediments. The goal is to determine the best candidate for bioaugmentation at the Ronan site. Column studies will be used to determine the minimum level of oxygen necessary to stimulate MTBE degradation by indigenous microorganisms. This will allow those involved with remediation at the Ronan site to determine if the addition of oxygen to this zone is an economically feasible remediation alternative. The contaminant movement and behavior at this site are well documented over the past five years. This presents an excellent opportunity to enhance the understanding of the behavior of MTBE in the natural environment.